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EXAMINER	
QI, ZHI QIANG	
ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 09/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/842,580	FUJIEDA, ICHIRO	
	Examiner	Art Unit	
	Mike Qi	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-14 and 16-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-14 and 16-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1-3** are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art (AAPA) in view of US 6,556,260 (Itou et al).

Claim 1, AAPA discloses (page 1, line 13 – page 4, line 19; Fig.1) a conventional reflective type LCD having LCD unit (120) and a front light unit (110), and the LCD unit (120) having a plurality of reflective members (122).

AAPA does not expressly disclose that the front light unit having a light emission area and a transparent area, and the front light unit includes a transparent substrate, a transparent electrode, an organic electroluminescent layer, and a non-transparent electrode, which are consecutively formed on the transparent substrate; and the LCD device in which the ambient light reflected by the light reflective members does not change course.

However, the AAPA discloses (page 1, line 13 – page 4, line 19; Fig.1) that the light emitted from the light source (111) through the light guide (112) and following a variation in the course thereof at the reflective surface (112b) and the light irradiated onto the LCD unit (120) and the light passes through the polarizing plate (126), phase plate (125), transparent substrate (124), liquid crystal layer (123), then the light reflected

from the reflective members (122) is transmitted from the LCD unit (120) toward the front light unit (110). Such that the front light unit (110) must have a light emission area to emit the light onto the LCD unit (120) and a transparent area to pass the light reflected from the light reflective members (122) of the LCD unit (120) toward the frond side of the front light unit (110), and the reflective members (122) must be arranged in matrix according the active matrix structure.

Itou discloses (col.1, line 18 – col.2, line 63; col.5, line 37 – col.6, line 33; Fig.1) that the flat light source (31) (as a front light unit) includes a transparent resin insulation layer (42) (col.6, lines 29-33) (functions as a transparent substrate), a transparent metal oxide electrode (23) (col.6, lines 18-21) (functions as a transparent electrode), an organic electro-luminescent element (EL) (must be light emitting material between two electrodes), and opaque metal layer (35,22) (as a non-transparent electrode), which are consecutively formed on the transparent resin insulation layer (42); and the LCD unit under the flat light source (31) is configured such that ambient light reflected by the plurality of light reflective members (such as the reflective electrodes (21)) does not change course, and a resulting brightness of the display is substantially maximized.

Itou indicates (col.1, line 40 - col.3, line 42) that using such front light source, for example, using electroluminescent element, especially using organic electroluminescent element, the reflection type color liquid crystal display would be achieved for advantages such as thin, light-weight and having a low power consumption and a higher contrast ratio.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use front light unit and LCD unit as claimed in claim 1 for achieving a thin, light-weight and having a low power consumption and a higher contrast ratio display.

Claim 2, AAPA discloses (page 1, line 13 – page 4, line 19; Fig.1) that the light emitted from the light source (111) through the light guide (112) and following a variation in the course thereof at the reflective surface (112b) and the light irradiated onto the LCD unit (120), in which the variation course of the light guide (112) has the property of reflecting light at a front side of the light emission area as shown in Fig.1.

Claim 3, AAPA discloses (Fig.1) that the reflective members (122) are arranged in a pitch, and the light emission, transparent areas are arranged in another pitch which is an integral multiple of the reflective members pitch.

3. **Claims 4-5, 7-9, 12, and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art (AAPA) in view of US 6,025,894 (Shirasaki et al) and US 6,556,260 (Itou et al).

Claims 9 and 16, AAPA discloses (page 1, line 13 – page 4, line 19; Fig.1) a conventional reflective type LCD having LCD unit (120) and a front light unit (110), and the LCD unit (120) having a plurality of reflective members (122).

AAPA does not expressly disclose that the front light unit having a transparent electrode, an electroluminescent layer and a non-transparent electrode consecutively arranged as viewed toward a front side; and the LCD device in which the ambient light reflected by the light reflective members does not change course.

However, it was common and known in the art to use electroluminescent (EL) as a surface light source. Because the EL light source using dielectric layer having phosphor powder between two conductive electrodes in which one is transparent, the other is non-transparent, and when a strong electric field applied, the phosphor would emit light using very little current.

Shirasaki discloses (col.7, line 24 – col. 11, line 49; Fig.1) that a structure of an organic EL device (12) has a reflection cathode electrode (15) of a light-reflective metal (non-transparent) formed on a substrate (14) of glass and an anode electrode (19) of a transparent electrode material (e.g., ITO) having a transmission property to the outside light formed on the entire surface of the organic EL layer (18), so that the light is emitted by the organic EL device (12). Although the organic EL device (12) of Shirasaki is used as a back light for a LCD panel (13), but it would have been an obvious variation to use such EL device as a front light as long as the anode electrode (transparent electrode) would be arranged toward the LCD panel.

Shirasaki indicates (col.11, lines 38 – 49) such organic EL device emits light with high luminance and exhibits a high transmission property with respect to light in a visible light's wavelength range.

Itou discloses (col.1, line 18 – col.2, line 63; col.5, line 37 – col.6, line 33; Fig.1) that the flat light source (31) (as a front light unit) includes a transparent metal oxide electrode (23) (col.6, lines 18-21) (functions as a transparent electrode), an organic electro-luminescent element (EL) (must be light emitting material between two electrodes), and opaque metal layer (35,22) (as a non-transparent electrode)

consecutively arranged as views toward a front side, and having a specified pattern; and the LCD unit under the flat light source (31) is configured such that ambient light reflected by the plurality of light reflective members (such as the reflective electrodes (21)) does not change course, and a resulting brightness of the display is substantially maximized.

Itou indicates (col.1, line 40 - col.3, line 42) that using such front light source, for example, using electroluminescent element, especially using organic electroluminescent element, the reflection type color liquid crystal display would be achieved for advantages such as thin, light-weight and having a low power consumption and a higher contrast ratio.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange a front light unit having a transparent electrode, an electroluminescent layer (EL) and a non-transparent electrode as claimed in claims 9 and 16 to emit light to the LCD unit for achieving thin, light-weight and having a low power consumption and a higher contrast ratio display.

Claims 4-5, 7-8, Shirasaki discloses (col.7, line 24 – col. 11, line 49; Fig.1) that a structure of an organic EL device (12) has a reflection cathode electrode (15) of a light-reflective metal (non-transparent) formed on a substrate (14) of glass and a anode electrode (19) of a transparent electrode material (e.g., ITO) having a transmission property to the outside light formed on the entire surface of the organic EL layer (18), and the reflection cathode electrode (15) (non-transparent) has a shape and area which matches the display area of the LCD panel (13), so as to display image. Although the

organic EL device (12) of Shirasaki is used as a back light for a LCD panel (13), but it would have been an obvious variation to use such EL device as a front light as long as the anode electrode (transparent electrode) would be arranged toward the LCD panel. Therefore, the non-transparent electrode such as the reflective electrode (15) must have a shape and area to match the display area (pixel area) of the LCD panel. Normally, the pixel area is arranged in a mesh structure (in a matrix), so that the non-transparent electrodes (reflective electrodes) would have a mesh structure too. Such that the emission area (non-transparent or reflective electrodes) and the transparent area (passing light area) would be arranged alternately in a direction and the reflective members would be arranged in another direction, and the non-transparent electrodes (reflective electrode) would constitute light emission area having a plurality of emission sections and each emission section would be controlled separately according to the image signals, and that would have been at least obvious.

Itou discloses (col.1, line 18 – col.2, line 63; col.5, line 37 – col.6, line 33; Fig.1) that the flat light source (31) (as a front light unit) includes a transparent metal oxide electrode (23) (col.6, lines 18-21) (functions as a transparent electrode), an organic electro-luminescent element (EL) (must be light emitting material between two electrodes), and opaque metal layer (35,23) (as a non-transparent electrode) consecutively arranged as views toward a front side, and having a specified pattern; and the LCD unit under the flat light source (31) is configured such that ambient light reflected by the plurality of light reflective members (such as the reflective electrodes

(21)) does not change course, and a resulting brightness of the display is substantially maximized.

Itou indicates (col.1, line 40 - col.3, line 42) that using such front light source, for example, using electroluminescent element, especially using organic electroluminescent element, the reflection type color liquid crystal display would be achieved such advantages such as thin, light-weight and having a low power consumption and a higher contrast ratio.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange the light emission area as claimed in claims 4-5, 7-8 for achieving thin, light-weight and having a low power consumption and a higher contrast ratio display.

Claim 12, AAPA discloses (page 1, line 13 – page 4, line 19; Fig.1) a conventional reflective type LCD device having LCD unit (120) and a front light unit (110), and a transparent protective member (113) mounts on the front light unit (110) for protecting the front light unit (110).

Shirasaki discloses (col.7, line 24 – col. 11, line 49; Fig.1) that a structure of an organic EL device (12) has a reflection cathode electrode (15) of a light-reflective metal (non-transparent) formed on a substrate (14) of glass and a anode electrode (19) of a transparent electrode material (e.g., ITO) having a transmission property to the outside light formed on the entire surface of the organic EL layer (18), so that the light is emitted by the organic EL device (12). Although the organic EL device (12) of Shirasaki is used as a back light for a LCD panel (13), but it would have been an obvious variation to use

such EL device as a front light as long as the anode electrode (transparent electrode) would be arranged toward the LCD panel.

Itou discloses (col.1, line 18 – col.2, line 63; col.5, line 37 – col.6, line 33; Fig.1) that the flat light source (31) (as a front light unit) includes a transparent metal oxide electrode (23) (col.6, lines 18-21) (functions as a transparent electrode), an organic electro-luminescent element (EL) (must be light emitting material between two electrodes), and opaque metal layer (35,22) (as a non-transparent electrode) consecutively arranged as views toward a front side, and the transparent substrate (11) (functions as a transparent protective member) is disposed in front the flat light source (31) (as a front light unit), so that the transparent protective member (such as the transparent substrate 11) would be mounted on the transparent electrode (23), the light emission layer (24,131) and the non-transparent electrode (35,22), and that would be formed as a front light unit.

Itou indicates (col.1, line 40 - col.3, line 42) that using such front light source, for example, using electroluminescent element, especially using organic electroluminescent element, the reflection type color liquid crystal display would be achieved for advantages such as thin, light-weight and having a low power consumption and a higher contrast ratio.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange such front light unit as claimed in claim 12 for achieving thin, light-weight and having a low power consumption and a higher contrast ratio display.

4. **Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,025,894 (Shirasaki et al) in view of US 6,556,260 (Itou et al).

Claim 18, Shirasaki discloses (col.7, line 24 – col. 11, line 49; Fig.1) that a structure of an organic EL device (12) has a reflection cathode electrode (15) of a light-reflective metal (non-transparent) formed on a substrate (14) of glass (functions as a transparent protective member) and an anode electrode (19) of a transparent electrode material (e.g., ITO) having a transmission property to the outside light formed on the entire surface of the organic EL layer (18) (the organic EL layer (18) formed between the reflective electrode (15) and the transparent electrode (19)), and the reflection cathode electrode (15) (non-transparent) has a shape and area which matches the display area of the LCD panel (13) so as to display image.

Shirasaki discloses (col.7, lines 37-39) that the non-transparent electrode such as the reflective electrode (15) has a shape and area to match the display area (pixel area) of the LCD panel. Normally, the pixel area is arranged in a mesh structure (in a matrix), so that the non-transparent electrodes (reflective electrodes) would have a mesh structure too, and that would have been at least obvious.

Although the organic EL device (12) of Shirasaki is used as a back light for a LCD panel (13), but it would have been an obvious variation to use such EL device as a front light as long as the anode electrode (transparent electrode) would be arranged toward the LCD panel.

Shirasaki indicates (col.11, lines 38 – 49) such organic EL device emits light with high luminance and exhibits a high transmission property with respect to light in a visible light's wavelength range.

Itou discloses (col.1, line 18 – col.2, line 63; col.5, line 37 – col.6, line 33; Fig.1) that the flat light source (31) (as a front light unit) includes a transparent resin insulation layer (42) (col.6, lines 29-33) (functions as a transparent substrate), a transparent metal oxide electrode (23) (col.6, lines 18-21) (functions as a transparent electrode), an organic electro-luminescent element (EL) (must be light emitting material between two electrodes), and opaque metal layer (35,22) (as a non-transparent electrode), which are consecutively formed on the transparent resin insulation layer (42); and the LCD unit such as the liquid crystal layer (10) at a rear side of the transparent electrode (23).

Itou indicates (col.1, line 40 - col.3, line 42) that using such front light source, for example, using electroluminescent element, especially using organic electroluminescent element, the reflection type color liquid crystal display would be achieved for advantages such as thin, light-weight and having a low power consumption and a higher contrast ratio.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use front light unit and LCD unit as claimed in claim 18 for achieving a thin, light-weight and having a low power consumption and a higher contrast ratio display

5. **Claims 10-11,13-14, 17 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA, Shirasaki and Itou as applied to claims 4-5, 7-9, 12 and 16 above, and further in view of US 4,142,773 (Avramenko et al).

Claims 10, 13, 17 and 19, AAPA discloses (page 1, line 13 page 4, line 19; Fig.1) using transparent protective member (113) for protecting the front light unit (110), and it was common and known in the art as the space between the protective member and the front light unit is filled with an inert gas and the space between the LCD unit and the front light unit is filled with an inert gas. Because the space between the two optical components such as between the protective member and the front light unit or between the LCD unit and the front light unit is filled with an inert gas, the two optical components would not be directly contacted each other.

Avramenko indicates (col.15, line 66 – col.13, line 8; Fig.11) a same concept of the space such as the transparent flanges (54) are filled with an inert gas (argon) would reduce the effect of surrounding medium such as thermal and mechanical deformations.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to fill an inert gas into the space between the two optical components as claimed in claims 10, 13 and 19 for reducing the effect of surrounding medium such as thermal and mechanical deformations.

Claims 11 and 14, the limitations are only given weight as intended use as any display can be used in a cellular phone.

Response to Arguments

6. Applicant's arguments filed on Jun. 20, 2003 have been fully considered but they are not persuasive.

Applicant's **only** arguments are as follows:

1) The reference Shirasaki is directed very specifically to the use of an organic EL device as a back light of a liquid crystal display panel, thus Shirasaki teaches away from the use of a front light configuration.

Examiner's responses to the Applicant's **only** arguments are as follows:

1) Although the organic EL device (12) of Shirasaki is used as a back light for a LCD panel (13), but it would have been an obvious variation to use such EL device as a front light as long as the anode electrode (transparent electrode) would be arranged toward the LCD panel. Further, the prior art of record such as the reference Itou discloses (col.1, line 18 – col.2, line 63; col.5, line 37 – col.6, line 33; Fig.1) that the flat light source (31) (as a front light unit) includes a transparent resin insulation layer (42) (col.6, lines 29-33) (functions as a transparent substrate), a transparent metal oxide electrode (23) (col.6, lines 18-21) (functions as a transparent electrode), an organic electro-luminescent element (EL) (must be light emitting material between two electrodes), and opaque metal layer (35,22) (as a non-transparent electrode), which are consecutively formed on the transparent resin insulation layer (42); and the LCD unit under the flat light source (31) is configured such that ambient light reflected by the plurality of light reflective members (such as the reflective electrodes (21)) does not change course, and a resulting brightness of the display is substantially maximized. Itou

indicates (col.1, line 40 - col.3, line 42) that using such front light source, for example, using electroluminescent element, especially using organic electroluminescent element, the reflection type color liquid crystal display would be achieved for advantages such as thin, light-weight and having a low power consumption and a higher contrast ratio.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (703) 308-6213

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Mike Qi
August 1, 2003